III. ISSUES AND EVALUATION FACTORS

The identification of issues relevant to the study area is an important step in the development of alternatives. Also, all stakeholders are made aware of issues they may not have considered prior to this process. Thus, a varied group of stakeholders assures that relevant issues are identified and considered in the alternatives development and evaluation process. Issues addressed a myriad of perspectives such as economic, social, and environmental. This chapter presents the ADG's identification of issues and development of evaluation factors by which the ADG could ensure that the alternatives developed addressed the group's concerns.

ISSUES IDENTIFICATION

Each member of the ADG represents one or many perspectives. The affiliation(s) of the ADG members and alternates is presented in Appendix A. Given these different perspectives, members of the ADG identified and presented their own various key issues to the ADG. The thirty-three members of the ADG were divided into four subgroups to help find commonality in the issues presented by the members of that subgroup. The use of subgroups allowed the ADG to more quickly and openly discuss the key issues.

These small groups presented nearly one hundred issues to the ADG. There was much commonality among them. The task of the subgroups was to identify those issues that were common, thus significantly reducing the number of issues. Lastly, the ADG identified from the remaining issues those that were similar and categorized them. The ADG identified the following twelve issue categories.

1. Property rights
2. Water management
3. Water quality
4. Ecosystem function, wildlife habitat, and listed species
5. Regulatory efficiency and effectiveness
6. Economic sustainability
7. Local land use policy
8. Avoidance of wetland impacts
9. Mitigation
10. Cumulative/secondary impacts
11. Restoration/retrofit
12. Public lands management/use

The ADG identified two issues that did not fit within the twelve issue categories: (1) a holistic approach to management and (2) higher standards of data and information. The ADG concluded that these were goals to strive for in southwest Florida, not issues that could be addressed in the development of alternatives.

EVALUATION FACTORS BY ISSUE CATEGORY

To ensure that the alternatives developed for the study area addressed these twelve issue categories that encapsulate the key issues of the ADG, the group developed factors by which to evaluate the alternatives. These factors were both qualitative and quantitative. Thus, at minimum twelve evaluation factors, one for each issue category, had to be developed by the ADG. The purpose of the evaluation factors are to aid the ADG in discriminating among alternatives. The ADG divided again into four subgroups, factor specialty groups, to efficiently address the development of evaluation factors.

First, the ADG grouped the issue categories into four sets of three issue categories. These were grouped according to similarity among the issue categories and the expertise of the ADG. The twelve issue categories were grouped as follows;

1. Property rights, local land use policy, and economic sustainability
2. Regulatory efficiency and effectiveness, avoidance of wetland impacts, and mitigation
3. Water management, water quality, and restoration/retrofit
4. Ecosystem function, wildlife habitat, and listed species, cumulative/secondary impacts, and public land management/use

The factor specialty groups were formed based on member expertise or interest in the issue categories. Each factor specialty group developed factors for each of their three issue categories. The factor specialty groups defined the evaluation factors, determined the type of measurement, and identified the associated data sources and reference materials. All factors were reviewed by the ADG prior to their use in the evaluation of alternatives.

The ADG was reminded that they were directed by the ADG charge, time, and available data. Time was a significant constraint in the development and evaluation of alternatives. For instance, economic models were available to address the issue of economic sustainability. However, the complexity of the models discouraged the use of these models in the time frame in which the ADG was operating. The use of available geographic information system (GIS) data supported the ADG and added efficiency to some analyses. Also, driven by these constraints, is distinguishing between “need to know” and “nice to know” information in terms of evaluation factors. ADG members were encouraged to focus on data and issues that were central to the task at hand. The development of evaluation factors by issue category is described in the following sections and summarized in Table III-1.

TABLE III-1

SUMMARY OF EVALUATION FACTORS BY ISSUE CATEGORY

Issue Category	Number of Factors	Summary Points
Property Rights	3	Comprehensive plan established expectations
		Comprehensive plan is the standard to which all other alternatives were compared
Water Management	7	Improve flowways, reduce flood damages, and improve water supply
		Best professional judgment
Water Quality	5	Land use types used to estimate water quality
Ecosystem Function, Wildlife Habitat, and Listed Species	12	GIS assist qualitative judgement
		Current habitat and sighting maps compared to all alternatives to determine impacts
Regulatory Efficiency and Effectiveness	3	Many factors but hard to measure
		Use quantity and functionality of wetlands and habitat impacted as a surrogate for permit review time and level of effort
Economic Sustainability	7	Models identified but require greater detail and time than available
		Best professional judgment
Local Land Use Policy	2	Comprehensive plan is the local land use policy
		Comprehensive plan is the standard to which all other alternatives were compared
Avoidance of Wetland Impacts	2	GIS assisted
		Index of number of acres at risk calculated
Mitigation	2	GIS assisted
		Index of mitigation opportunities calculated
Cumulative & Secondary Impacts	10	Social and environmental impacts
		Best professional judgment used to rank the alternatives
Restoration/Retrofit	5	Flowways and habitat restoration
		Opportunities seen within residential and agricultural land
Public Lands Management/Use	1	Adjacent land use types indicate compatibility
		GIS utilized

Property Rights

The factor specialty group that addressed this issue described property rights as the right to use your property as you choose without harming others, subject to:

- Applicable law and regulation (local government land plan and state and federal permitting regulations)
- Timely compensation for value lost due to regulatory change
- Timely compensation for taking

The group cited the property owner's constitutional right as a given. However, the ADG recognized the local government's comprehensive plan generally sets forth the current expectation of land use and contributes significantly to expectations of land value.

The factor specialty group identified three factors to evaluate the extent to which the alternatives addressed the issue of property rights. These factors were (1) fair market value, (2) vested rights, and (3) reasonable expectation for use of land and return on investment.

The factor specialty group suggested means by which to measure these factors as well as data sources (i.e., property appraiser records, tax records, and independent appraisals). However, given the time available, the factor specialty group relied on the members best professional judgment. The group graded the alternatives by evaluation factor on a scale of one to four where one was worst and four was best in terms of property rights. The comprehensive plan was considered the standard from which to compare all alternatives.

Water Management

The factor specialty group that addressed this issue described that the purpose of water management is to provide adequate water supply for human consumption, agriculture, and commercial, recreational, and natural resource demands while balancing these with the need to provide flood protection.

The factor specialty group identified seven evaluation factors to ensure the alternatives addressed fully the issue of water management. The seven evaluation factors are as follows;

1. Infrastructure existence (stormwater utility/maintain and improve)
2. Home damage during storm events (level of flood protection)
3. Home construction to meet the one-hundred-year storm event
4. Flood depth and duration
5. Historic flow patterns (maintain and improve)
6. Adequate water storage (balance consumption with hydroperiods)
7. Groundwater data floors and ceilings (aquifer zoning)

To measure infrastructure existence, the group decided to compare the impact the alternatives would have on capital costs and maintenance costs. The group addressed home damage during storm events by estimating the number of homes affected. The group also evaluated whether the alternative increased, maintained, or decreased flood depth and duration. Also, alternatives were evaluated on whether they destroyed, maintained, or improved historical flow patterns, including

the timing, direction, quantity, quality, and duration of these flows. Water supply was evaluated with respect to needs for natural resources, water storage, and groundwater floors and ceilings.

Given all of these possible means for measuring the impacts of the alternatives by evaluation factor, the group utilized the professional judgment of its members to aid in the evaluation of the alternatives. The factor specialty group applied a scoring method of +, 0, - to signify whether each alternative addressed, did not address, or negatively addressed the evaluation factor, respectively.

Water Quality

The factor specialty group that addressed this issue defined that the purpose of the water quality issue is to ensure the maintenance of surface- and groundwater quality.

Several presentations were made to the ADG concerning the status of water quality of the region's rivers and tributaries, estuaries, and bays. Presentations made it clear that there is a lack of data to answer some questions regarding water quality. The group first recommended that more data collection and monitoring are needed to fully understand water quality trends and related issues in southwest Florida.

The factor specialty group identified four factors that can be applied to evaluate whether the alternatives developed by the ADG address the issue of water quality. The identified factors are as follows:

1. Pollution loading
2. Freshwater pulses
3. Habitat loss
4. Groundwater impact

The group noted several items that the factors needed to address, such as establishing standards for point and nonpoint pollution, impacts on marine plant and animal communities, recreation, and health. All of these items are addressed in the four evaluation factors.

Groundwater impacts were estimated by analyzing acres of development in significant recharge locations. The number of acres converted to impermeable surfaces by alternatives was utilized to estimate the impact of freshwater pulses. Habitat loss was derived by the acres of alterations to wetlands and mangroves. Pollution loading was addressed utilizing a water quality index that was estimated for each alternative.

Pollutant-loading estimation was done based on land use types and land use criteria defined in the alternatives. Thus, the acreage of the different land use types defined by the alternatives drives the estimation of water quality. This screening method was developed and tailored to the ADG process by the consulting firm Science Applications International Corporation (SAIC), contracted by the U.S. Environmental Protection Agency (EPA). The pollutant ranges and definitions are based upon those utilized by the Florida Department of

Environmental Protection (DEP). Given these calculations and best professional judgment, the factor specialty group equally weighted the factors during the ranking of alternatives.

Ecosystem Function, Wildlife Habitat, and Listed Species

The factor specialty group addressed upland, wetland, and aquatic habitat changes, effects of fragmentation on listed species and ecosystem functions, and the maintenance of ecological integrity and biodiversity.

The factor specialty group identified twelve factors that can be applied to evaluate whether the alternatives developed by the ADG address the topics of the issue category ecosystem function, wildlife habitat, and listed species. The twelve evaluation factors are listed below.

1. Effects on Florida Game and Freshwater Fish Commission's (GFC) Strategic Habitat Conservation Area (SHCA) habitat-planning objectives
2. Effects on Priority I and II Florida Panther habitat
3. Effects on Southwest Florida Regional Planning Council (RPC) resource regional significance goals
4. Effects on U.S. Fish and Wildlife Service (FWS) Multi-species Recovery Plan and the Florida Panther Habitat Preservation Plan
5. Effects on occurrences of listed species
6. Effects on occurrences of rookeries
7. Effects on loss of native plant communities (common and rare)
8. Effects on fragmentation and connectivity of plant and animal habitats
9. Effects on loss of seasonal wetlands
10. Effects on integrity of flowways (rivers, sloughs, and strands)
11. Effects on wetland dependant species
12. Effects on aquatic resources

Much of the information, primarily maps, utilized by the factor specialty group was available and able to be readily digitized for analysis using geographic information system (GIS) capabilities. Thus, digitized alternatives compared against digitized natural resource maps were able to generate acres or counts of impacted areas or species, respectively. As a result, the units impacted can be compared among alternatives to determine, with judgment, which is better or worse for that particular factor. However, the evaluation factor, effects on FWS Multi-species Recovery Plan and the Florida Panther Habitat Preservation Plan, was not GIS applicable.

Regulatory Efficiency and Effectiveness

The factor specialty group that considered this issue defined its intent as the effort to add certainty, consistency, clarity, and celerity to the permitting process while improving its integrity and effectiveness. The basis for analysis of this factor was the amount of area on the alternatives maps that was or was not filled. Areas not filled suggested that agreement could not be reached which reflected negatively on regulatory efficiency and effectiveness. The factor specialty group originally identified three factors that could be applied to evaluate whether the alternatives developed by the ADG addressed the issue category regulatory efficiency and effectiveness. These evaluation factors are listed below.

1. Permit review time and level of effort
2. Pre-identified impact/mitigation and preserve areas
3. FWS/GFC general concerns addressed

After applying these factors to several alternatives, the factor specialty group concluded that the means by which the factors were being measured did not discriminate among alternatives which was one of the main objectives of the evaluation activities. Thus, at the tenth meeting, the factor specialty group revisited the measures and created a series of measures that supported the three named factors. The first factor assesses the level of restrictions on an alternative land use legend. The second factor considered the degree of commonality between the alternatives as well as current regulatory processes. These two are in addition to the original measure that quantified the area of the alternative map that was filled in. For the third factor, measures were identified to reflect: potential need for section 7 coordination; potential that permit review will be slowed due to the sensitivity of natural resources within nonpreserve designations; effectiveness of the program to meet federal mandates and charges; and efficiency in the timelines and cost.

Economic Sustainability

The factor specialty group defined the purpose of this issue as the protection, enhancement, and expansion of the long-term economic viability of the region, including agricultural, commercial, construction, environmental, fisheries, industrial, residential, and recreational and tourism elements. Given these many purposes addressed by this issue category, the group had to develop a number of evaluation factors to adequately address these purposes.

The factor specialty group identified seven factors that were applied to evaluate whether the alternatives developed by the ADG address the purposes of economic sustainability. The seven evaluation factors are listed below.

1. Job creation
2. Home affordability
3. Cost of living
4. Property tax base
5. Cost to implement

6. Increased taxes
7. Environmental justice

The use of economic-based models and projections was discussed as an option to address several of these factors. However, given the time and data available, this was not a viable option. Although these models could not be applied at this time, they should be included in the Corps' conclusion of the EIS. Given that the factor specialty group did not apply these models, the group relied on their best professional judgment in the evaluation of alternatives utilizing the seven factors. The group scored the evaluation factor on a scale of one to four where one was worst and four was best in terms of economic sustainability. Since the comprehensive plan was created with economic sustainability as one of its primary objectives, it was considered the standard to compare all alternatives.

Local Land Use Policy

The factor specialty group that considered this issue wanted to ensure that alternatives recognized the local land use plans and regulations. To ensure this, the group evaluated each alternative's consistency with these plans and regulations. The Lee and Collier County Comprehensive Plans are the legally adopted local land use plans and establish regulations for unincorporated areas. Thus, all other alternatives are compared with these comprehensive plans making this a rather straightforward analysis.

The factor specialty group identified two factors that can be applied to evaluate whether the alternatives developed by the ADG address the issue category local land use policy. The two evaluation factors are (1) significance of conflicts with local land use plans and regulations and (2) hurricane preparedness (i.e., evacuation routes and shelter availability).

Avoidance of Wetland Impacts

The factor specialty group that considered this issue wanted to ensure that alternatives avoided to some degree impacts to wetlands. The group addressed both the acres of wetlands at risk as well as the functional importance of the wetland acres at risk by an alternative. The two evaluation factors identified by the group were (1) total acres at risk and (2) total wetland acres by functionality at risk by each alternative. Thus, this factor specialty group relied heavily on the outputs of GIS.

The basic premise behind the two factors is determining the number of wetland acres and functions at risk by an alternative. For instance, the acres at risk are the total wetland acres within a particular use type (i.e., agricultural, residential, and urban) multiplied by a risk factor. The factor specialty group relied on their best professional judgment to determine risk factors by land use type. Likewise, those acres at risk are identified as having high, medium, or low wetland function. Each level of function has a multiplier representing the relative level of function associated with the acres within that level of function.

Mitigation

The factor specialty group that considered this issue wanted to ensure appropriate mitigation for unavoidable wetland impacts. The group addressed both the acres of wetland mitigation opportunity as well as the functional importance of the wetland acres available for mitigation by an alternative. The two evaluation factors identified by the group were (1) total acres provided for mitigation opportunity and (2) total wetland functional improvement opportunity provided. These evaluation factors were dependent upon GIS outputs of acres of opportunity.

The basic premise behind the two factors is designating lands for potential mitigation (opportunity) versus the number of wetland acres and functions at risk by an alternative. For instance, the number of acres proposed for preservation versus the number of wetland acres at risk by a given alternative provides a useful measure by which to compare other alternatives. The concept of risk is discussed under the topic of avoidance of wetland impacts.

Likewise, the level of wetland function of the proposed preservation acreage is taken into account. The factor specialty group, relying on best professional judgment, assigned factors indicating the functionality of the potential mitigation acres. Wetland areas were identified as either high-, medium-, or low-functioning wetlands within various levels of opportunity of mitigation identified based on geographical context. This weighted index is then compared with the index of wetland functions at risk. The concept of risk is discussed under the topic of avoidance of wetland impacts.

Cumulative/Secondary Impacts

The factor specialty group first defined the terms cumulative and secondary impacts as they apply to the study area. Cumulative impacts are the impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal and nonfederal) or person undertakes such other actions. Secondary impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

The factor specialty group developed ten factors by which to evaluate alternatives. These ten factors fall within two categories: (1) environmental and (2) social impacts. Below are the ten evaluation factors.

1. Impacts on infant mortality
2. Impacts on road needs
3. Impacts on air pollution loading
4. Impacts on water pollution loading
5. Impacts on crime rates
6. Impacts on hurricane vulnerability
7. EPA Index of watershed indicators

8. Impacts on wetlands only
9. Impacts on hydrology
10. Amount of lands in public and private ownership in protected status

To measure these factors, several models that could be driven by GIS were recommended. However, given the time and available data, in addition to GIS, the factor specialty group applied their best professional judgment to compare the alternatives for the study area by each of the ten factors.

Restoration/Retrofit

The factor specialty group defined restoration/retrofit as the act of mimicking natural functions and re-creating urban areas related to water management, water quality, and ecological systems, and to provide economic sustainability and quality of life by upgrading existing infrastructure to current standards. The factor specialty group recognized the benefit of a larger planning vision and investment in regional natural systems.

To address the items raised in the factor specialty group's definition of restoration/retrofit, the group identified five factors to evaluate the alternatives. The evaluation factors are listed below.

1. Natural functions maintained in natural systems (i.e., flowways)
2. Exotics control (percent and size of parcels treated and restored)
3. Percent of residents using self-supplied infrastructure (i.e., septic tanks)
4. Percent of agricultural land applying Best Management Practices (BMP)
5. Wildlife habitat restoration

Originally the group identified a factor that addressed quality of life. However, during the process of evaluation, it was concluded that this was an overall goal for the region and not a factor by which to evaluate alternatives. Given limited data, the factor specialty group applied professional judgment in the evaluation of alternatives using the five evaluation factors listed above. Using best professional judgment, the factors specialty group applied a scoring method of +, 0, - to signify whether each alternative addressed, did not address, or negatively addressed the evaluation factor, respectively. GIS outputs were utilized to aid the group in their determinations.

Public Lands Management/Use

The factor specialty group developed evaluation factors to ensure that the alternatives did not negatively impact the management and use of public lands. The two factors were (1) compatibility with land management plans and (2) degradation or improvement of resources on public lands. The compatibility of various on-site and adjacent land use was considered. The measure of whether an alternative negatively or positively impacted public lands was the land use type identified adjacent to the boundary of current public lands. Thus, an industrial park adjacent

to public lands would be less compatible than agricultural activities. Also, the factor specialty group took into consideration indirect impacts of land uses not adjacent to public lands, such as activities upstream. The use of GIS was beneficial in allowing the factor specialty group to identify land use types and their extent of potential impact.

SUMMARY

The ADG identified twelve issue categories from nearly one hundred individual issues presented by the ADG members. These issues were important to consider in the development of alternatives. To ensure that the alternatives addressed these issues, the ADG developed evaluation factors by which to measure the extent to which alternatives addressed the issues, thus allowing the comparison of alternatives. The number of evaluation factors by issue category ranged from one to twelve. GIS maps and resulting tables played an important role in the graphical depiction and evaluation of the alternatives. Chapter IV presents the alternatives development process as well as the alternatives for the study area. Chapter V applies the evaluation factors to those alternatives.